

## METHOD AND APPARATUS FOR SIMULATING PHYSICAL FIELDS

### Abstract of the Disclosure

In order to design on-chip interconnect structures in a flexible way, a CAD approach is advocated in three dimensions, describing high frequency effects such as current redistribution due to the skin-effect or eddy currents and the occurrence of slow-wave modes. The electromagnetic environment is described by a scalar electric potential and a magnetic vector potential. These potentials are not uniquely defined, and in order to obtain a consistent discretization scheme, a gauge-transformation field is introduced. The displacement current is taken into account to describe current redistribution and a small-signal analysis solution scheme is proposed based upon existing techniques for static fields in semiconductors. In addition methods and apparatus for refining the mesh used for numerical analysis is described.

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